

# LAOIS - COUNTY GEOLOGICAL SITE REPORT

<b>NAME OF SITE</b>	<b>Castlecomer Borehole - Swan</b>		
Other names used for site	Swan Artesian borehole		
<b>IGH THEME</b>	<b>IGH16 Hydrogeology</b>		
<b>TOWNLAND(S)</b>	<b>Moyadd</b>		
<b>NEAREST TOWN/VILLAGE</b>	<b>Wolfhill</b>		
<b>SIX INCH MAP NUMBER</b>	<b>31</b>		
<b>ITM CO-ORDINATES</b>	<b>656310E 682460N</b>		
<b>1:50,000 O.S. SHEET NUMBER</b>	<b>61</b>	<b>GSI BEDROCK 1:100,000 SHEET NO.</b>	<b>19</b>

## Outline Site Description

An artesian borehole.

## Geological System/Age and Primary Rock Type

The borehole is drilled through Upper Carboniferous (Pennsylvanian) bedrock of the Westphalian Coolbaun Formation shales into the fine-grained Swan Sandstone Formation. The catchment area of the Swan borehole lies at the northern end of the Castlecomer Plateau.

## Main Geological or Geomorphological Interest

Located beside Swan Bridge, this artesian well consists of a pump house (elevation 170m OD) housing a borehole (Production Well LS 31/1) drilled to a depth of 39m, tapping a confined aquifer of Swan Sandstone, about 10m thick. The static water level (the level to which the confined aquifer water would normally level off) is around 174m OD.

An artesian well is one that is drilled into a confined groundwater aquifer, in this case sandstone overlain by low permeability shales. The confined aquifer is recharged by rainfall falling on the unconfined, outcropping portion of the sandstone aquifer around the perimeter of the Castlecomer plateau.

At least one major phase of folding around 300 million years ago (Variscan Orogeny) caused considerable fracturing in the underlying Clay Gull Sandstone Formation (lower) and Swan Sandstone Member (upper), but did not affect as severely the surrounding and overlying impermeable shales.

Carbon isotope dating of water from the well carried out in 1976 yielded an age of around 1,440 years, indicating that water moves very slowly through the aquifer.

The well operates at a pumping rate of 916m<sup>3</sup> per day (8,400 gallons per hour) and provides an abstract rate of 590 m<sup>3</sup> per day (130,000 gallons per day).

## Site Importance – County Geological Site

This is an important hydrogeological phenomenon of artesian well and confined aquifer behaviour in this part of County Laois and is a good example of an artesian well that serves a public water supply (GSI Well ID 2317NE W07). It is therefore a very important County Geological Site considering its value to the local Swan Water Supply Scheme. The aquifer is categorised as: Locally Important (Lm), generally moderately productive, fractured sandstone aquifer.

## Management/promotion issues

The Swan Water Supply Scheme groundwater source is deemed to be relatively protected from contamination by its confined aquifer condition and its distance from the surface recharge area, located around 1km up-gradient to the north and northwest. Contamination at the recharge area would be unlikely to affect the source for many hundreds of years.



Pumphouse and works at Swan Public Water Supply Scheme. Clogh River to right near trees.



Swan Public Water Supply Scheme viewed from Swan Bridge.

